Complex Carbohydrates in Drug Research: Structural and Functional Aspects (Alfred Benzon symposium 36); edited by Klaus Bock and Henrik Clausen, Munksgaard; Copenhagen, 1994; 454 pages. DKK 400.00. ISBN 87-16-11229-6.

This symposium proceeding contains 27 excellent, short reviews, ranging in topic from nuclear magnetic resonance spectroscopy, over glycosyltransferase enzymology, to tumor cell adhesion. The main theme is glycobiology, a steadily growing field of research that has reached such a level as to warrant extensive drug-related research. This has been achieved by new superb analytical techniques, enabling structural identification of very small amounts of intact macromolecular glycoconjugates. Methods for enzymatic synthesis have been improved, and will continue to be improved as several of the key-glycosyltransferases have been cloned and expressed. In relation to drug development, much is expected from the synthesis of carbohydrate mimetics. Based on knowledge of the carbohydrate structures and the ability to manipulate these, much has been learned in the last decade on the biological function that various glycoforms of macromolecules can have. This aspect is stressed in the fields of cell adhesion, transplantation, immunotherapy, and bacterial adhesion.

The structural and synthetic issues are covered in the first 18 chapters by front leaders of the field, Vliegenthart, Dell, Paulsen, Dwek, Hindsgaul, Bock, Troy, and Kobata, to mention just a few. The chapters cover computer simulation of glycoprotein and oligosaccharide molecular dynamics, studies of carbohydrate chains of glycoproteins by NMR and mass spectrometry, glycosyltransferase assays and synthesis of substrates for these, glycosylated peptide templates as cell adhesion inhibitors, and basic features on protein–carbohydrate interactions. The biological issues are covered in nine chapters written by other field leaders, like Hart, Hakomori, Fukuda, Karlsson, and Taylor-Papadimitriou. Two chapters are devoted to carbohydrate-mediated cell adhesion, a field in which the synthesis of carbohydrate, or carbohydrate mimetic, drugs is keeping industry busy. The glycosylation of mucin-type peptides is reviewed as a tumor-associated event, with a possible clinical use, and as a target for vaccine production against HIV virus. The cell biology of O-glycosylated intracellular proteins is reviewed, based on the many new reports on these structures. Finally, the potential clinical usefullness of glycosylation is stressed by reviews on transplantation and bacterial adhesion.

The reviews are limited to approximately 10 pages with nice and instructive figures. Ten pages covering 'Application of mass spectrometry to complex carbohydrates' is not much, and naturally these reviews are not for the lay reader, but an easy way to up-date knowledge for the person who is already in the field. The reference section is a highly useful guide for those who whish to delve deeper into a specific field.

In conclusion, I highly recommend this book to researchers in the field of glycobiology. I am sure they will have some interesting hours with this book, and even feel enjoyment when they read the discussion sections.

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Booklist no. 121 November 1994

1. Arias, I.M. (ed. in chief) Boyer, J.L., Fausto, N., Jakoby, W.B., Schachter, D. and Shafritz, D.A. (assoc. eds.) The Liver Biology and Pathobiology, third edition. Raven Press; New York, 1994. 1,622 pp. $305.00.
2. Ormerod, M.G. (ed.) Flow cytometry, Royal Microscopical Society Microscopy Handbooks 29. BIOS Scientific Publishers; Oxford, 1994. xi + 77 pp. $25.00.
3. Basava, C. and Anantharamaiah, G.M. (eds.) Peptides: Design, Synthesis and Biological Activity. Birkhauser; Boston, 1994. 352 pp. DM 198.00.
4. Bevan, R.D. and Bevan, J.A. (eds.) The Human Brain Circulation: Functional Changes in Disease. The Humana Press; Totowa, 1994. xiv + 456 pp. $89.50.
5. Buck, S.H. (ed.) The Tachykinin Receptors. The Humama Press; Totowa, 1994. xi + 630 pp. $125.00.
6. Nakanishi, K., Berova, N. and Woody, R.W. (eds.) Circular Dichroism: Principles and Applications. VCH; New York, 1994. xvii + 570 pp. DM 209.00.
7. Shabarova, Z. and Bogdanov, A. (eds.) Advanced Organic Chemistry of Nucleic Acids. VCH; Weinheim-New York, 1994. xv + 588 pp. DM 248.00.
8. Doyle, R.J. and Slifkin, M. (eds.) Lectin–Microorganism Interactions. Marcel Dekker Inc.; New York, 1994. viii + 401 pp. $165.00.
9. Latchman, D.S. (ed.) From Genetics to Gene Therapy. BIOS Scientific Publishers; Oxford, 1994. xv + 261. $99.00.
10. Linskens, H.F. and Jackson, J.F. (eds.) Vegetables and Vegetable Products. Modern Methods of Plant Analysis, Vol. 16. Springer-Verlag; Berlin-Heidelberg-New York, 1994. xv + 187 pp. DM 198.00.
11. Brown, F. (ed.) Recombinant Vectors in Vaccine Development. Developments in Biological Standardization, Vol. 82. Karger; Basel, 1994. ix + 268 pp. $200.00.
12. Duboule, D. (ed.) Guidebook to the Homeobox Genes. Oxford University Press; Oxford, 1994. v + 290 pp. £22.50.
13. Merz, K. and LeGrand, S. (eds.) The Protein Folding Problem and Tertiary Structure Prediction. Birkhauser; Basel-Boston-Berlin, 1994. x + 581 pp. $99.00.
14. Raeburn, D. and Giembycz, M.A. (eds.) Airways Smooth Muscle: Structure, Innervation and Neurotransmission. Birkhauser; Basel-Boston-Berlin, 1994. vii + 328 pp. $149.00.
15. Meister, A. (ed.) Advances in Enzymology, Vol. 69. Wiley; New York, 1994. v + 316 pp. $98.00.

The most recently published Booklists are the following:

No. 105 (February, 1992) FEBS Lett. 297, 312–314.
No. 106 (March, 1992) FEBS Lett. 299, 300–302.
No. 107 (May, 1992) FEBS Lett. 303, 100–102.
No. 108 (July, 1992) FEBS Lett. 306, 284–286.
No. 109 (September, 1992) FEBS Lett. 310, 96–98.
No. 110 (November, 1992) FEBS Lett. 313, 326–327.
No. 111 (January, 1993) FEBS Lett. 316, 205–207.
No. 112 (March, 1993) FEBS Lett. 319, 289–291.
No. 113 (June, 1993) FEBS Lett. 323, 302–303.
No. 114 (July, 1993) FEBS Lett. 327, 120–122.
No. 115 (September, 1993) FEBS Lett. 331, 205–206.
No. 116 (November, 1993) FEBS Lett. 335, 147–149.
No. 117 (January, 1994) FEBS Lett. 337, 312–314.
No. 118 (May, 1994) FEBS Lett. 344, 270.
No. 119 (August, 1994) FEBS Lett. 351, 144.
No. 120 (October, 1994) FEBS Lett. 352, 403.